SAMSUNG

COLOR MONITOR

SyncMaster 570BTFT
SyncMaster 580BTFT
(RN15MSS / RN15MST
RN15MOS / RN15MOT)

SERVICE Manual

COLOR MONITOR

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1 Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC Power Jack before servicing.
3. When the chassis is operating, semiconductor heatsinks are potential shock hazards.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead. (Disconnect the AC line cord from the AC outlet.)
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1): **WARNING: Do not use an isolation transformer during this test.** Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

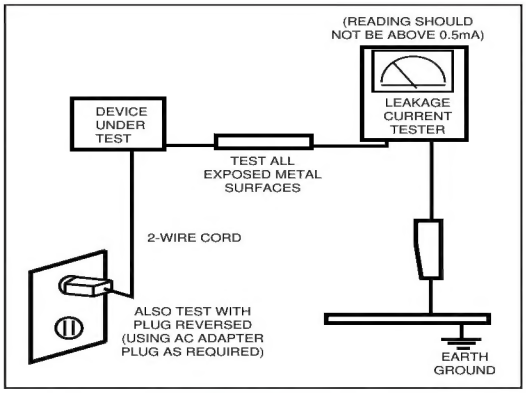

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and / or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

WARNING: **An electrolytic capacitor installed with the wrong polarity might explode.**

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

2-1 Specifications

Item	Description
LCD Panel	TFT-LCD panel, RGB vertical stripe, normaly white, 15-Inch viewable, 0.297 (H) x 0.297 (V) pixel pitch
Scanning Frequency	Horizontal : 30 kHz to 61 kHz (Automatic) Vertical : 50 Hz to 75 Hz (Automatic)
Display Colors	16,772,216 colors
Maximum Resolution	Horizontal : 1024 Pixels Vertical : 768 Pixels
Input Video Signal	Analog, 0.714 Vp-p ± 5% positive at 75 Ω, internally terminated
Input Sync Signal	Type: Seperate H/V sync, Composite H/V, Sync-on-Green, automatic synchronization without external switch of sync type Level: TTL level
Maximum Pixel Clock rate	80 MHz
Active Display Horizontal/Vertical	304.1 mm / 228.1 mm
AC power voltage & Frequency	AC 90 to 264 Volts, 60/ 50 Hz ± 3 Hz
Power Consumption	25 W (max.)
Dimensions Unit (W x D x H) Carton (W x D x H)	 15.9x7.7x16.5 Inches (404 x 196 x 419 mm) 18.7 x 11.1 x 20.1 Inches (475 x 282 x 510 mm)
Weight (Net/Gross)	7.4 kg / 9.4kg
Environmental Considerations	Operating Temperature : 50°F to 104°F (10°C to 40°C) Humidity : 10 % to 80 % Storage Temperature : -13°F to 113°F (-25°C to 45°C) Humidity : 5 % to 95 %
Audio Characteristics (optional)	• Audio Characteristics • Built-in Microphone: High-sensitivity condenser microphone (mono) • Audio input: Left/Right Stereo phone jack, 0.7 Vrms • Sound output: 16 W (left) + 16 W (right)/THD 1% at 16ohm • Frequency response: 80 Hz~20 kHz (at –3dB) • Headphone: Max 50mW output (3.5-pi jack) • Speaker: Internal semi Dome (16ohm x 2)

- SyncMaster 570BTFT/580BTFT complies with SWEDAC (MPR II) recommendations for reduced electromagnetic fields.
- Designs and specifications are subject to change without prior notice.

2-2 Pin Assignments

Sync Type / Pin No.	15-Pin Signal Cable Connector		
	Separate	**Composite**	**Sync-on-green**
1	Red	Red	Red
2	Green	Green	Green + H/V Sync
3	Blue	Blue	Blue
4	GND	GND	GND
5	GND (DDC Return)	GND (DDC Return)	GND (DDC Return)
6	GND-R	GND-R	GND-R
7	GND-G	GND-G	GND-G
8	GND-B	GND-B	GND-B
9	No Connection	No Connection	Not Used
10	GND-Sync/Self Test	GND-Sync/Self Test	GND-Sync/Self Test
11	GND	GND	GND
12	DDC Data	DDC Data	DDC Data
13	H-Sync	H/V-Sync	Not Used
14	V-Sync	Not Used	Not Used
15	DDC Clock	DDC Clock	DDC Clock

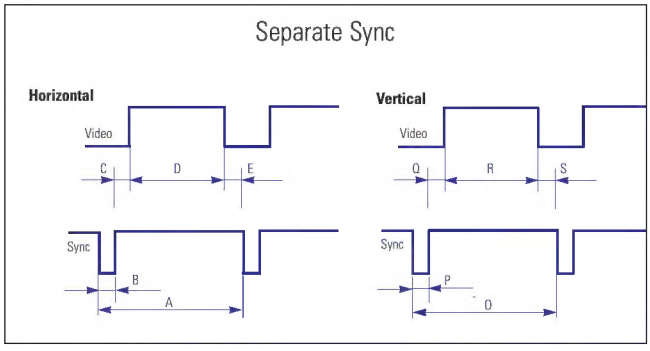
Sync Type / Pin No.	26-Pin Signal Cable Connector		
	Separate	**Composite**	**Sync-on-green**
1	Red	Red	Red
2	Green	Green	Green + H/V Sync
3	Blue	Blue	Blue
4	GND	GND	GND
5	GND (DDC Return)	GND (DDC Return)	GND (DDC Return)
6	GND-R	GND-R	GND-R
7	GND-G	GND-G	GND-G
8	GND-B	GND-B	GND-B
9	No Connection	No Connection	Not Used
10	GND-Sync/Self Test	GND-Sync/Self Test	GND-Sync/Self Test
11	GND	GND	GND
12	DDC Data	DDC Data	DDC Data
13	H-Sync	H/V-Sync	Not Used
14	V-Sync	Not Used	Not Used
15	DDC Clock	DDC Clock	DDC Clock
16 ~26	GND	GND	GND

2-3 Timing Chart

This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 2-1. Timing Chart

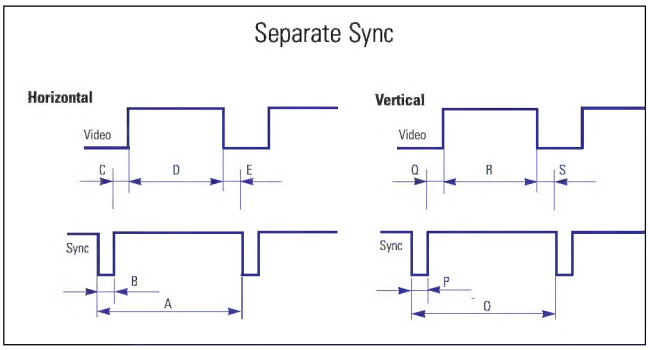
Mode / Timing	IBM			VESA			
	VGA1/70 Hz 640 x 350	VGA2/70 Hz 720 x 400	VGA3/60 Hz 640 x 480	640/72 Hz 640 x 480	640/75 Hz 640 x 480	800/56 Hz 800 x 600	800/60 Hz 800 x 600
fH (kHz)	31.469	31.469	31.469	37.861	37.500	35.156	37.879
A µsec	31.778	31.777	31.778	26.413	26.667	28.444	26.400
B µsec	3.813	3.813	3.813	1.270	2.032	2.000	3.200
C µsec	1.589	1.589	1.589	3.810	3.810	3.556	2.200
D µsec	26.058	26.058	26.058	20.825	20.317	22.222	20.000
E µsec	0.318	0.318	0.318	0.508	0.508	0.667	1.000
fV (Hz)	70.086	70.087	59.940	72.809	75.000	56.250	60.317
O msec	14.268	14.268	16.683	13.735	13.333	17.778	16.579
P msec	0.064	0.064	0.064	0.079	0.080	0.057	0.106
Q msec	1.716	0.858	0.794	0.528	0.427	0.626	0.607
R msec	11.504	13.155	15.761	13.100	12.800	17.067	15.840
S msec	0.985	0.191	0.064	0.026	0.027	0.028	0.026
Clock Frequency (MHz)	25.175	28.322	25.175	31.500	31.500	36.000	40.000
Polarity H.Sync	Positive	Negative	Negative	Negative	Negative	Positive	Positive
V.Sync	Negative	Positive	Negative	Negative	Negative	Negative	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

Table 2-1. Timing Chart Continued

Mode / Timing	VESA					MAC.	
	800/72 Hz 800 x 600	800/75 Hz 800 x 600	1024/60 Hz 1024 x 768	1024/70 Hz 1024 x 768	1024/75 Hz 1024 x 768	640/67 Hz 60 x 480	832/75 Hz 832 x 624
fH (kHz)	48.077	46.875	48.363	56.476	60.023	35.000	49.726
A µsec	20.800	21.333	20.677	17.707	16.660	28.571	20.110
B µsec	2.400	1.616	2.092	1.813	1.219	2.116	1.117
C µsec	1.280	3.232	2.462	1.920	2.235	3.175	3.910
D µsec	16.000	16.162	15.754	13.653	13.003	21.164	14.524
E µsec	1.120	0.323	0.369	0.320	0.203	2.116	0.559
fV (Hz)	72.188	75.000	60.004	70.069	75.029	66.667	74.551
O msec	13.853	13.333	16.666	14.272	13.328	15.000	13.414
P msec	0.125	0.064	0.124	0.106	0.050	0.086	0.060
Q msec	0.478	0.448	0.600	0.513	0.466	1.114	0.784
R msec	12.480	12.800	15.880	13.599	12.795	13.714	12.549
S msec	0.770	0.021	0.062	0.053	0.017	0.086	0.020
Clock Frequency (MHz)	50.000	49.500	65.000	75.000	78.750	30.240	57.284
Polarity H.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
V.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

3 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the SyncMaster 570BTFT/580BTFT monitors.

WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.

3-1 Disassembly

Cautions: 1. Disconnect the monitor from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.

3-1-1 Removing the Stand

1. Remove 4 screws in the hinge area.
2. Pry it off the back of the monitor.
3. Disconnect Power Cord and Signal Cable.

3-1-2 Main Body Disassembly

1. Remove the 4 screws on the four corner of the Rear Cover.
2. Remove Rear Cover from the Front Cover.
3. Remove 11 screws on the Shield and remove the shield.
4. Disconnect Inverter wire, Function PCB wire and Interface wire.
   Remove 4 screws on the Main PCB and remove 2 screws on the D sub shield.
5. Remove the Main PCB Assembly.
6. Remove 6 screws on the Inverter PCB Assembly and then remove it
7. Remove 6 screws on the Rear Panel Bracket.
8. Remove the Bracket Assembly from the Front Cover.
9. Remove 3 screws on the Function PCB from locking area of Function knob and remove Function PCB.
10. Remove 4 screws on the Shield of Panel.
11. Remove the Shield.
12. Remove Rear Bracket from Panel.
13. Remove 2 screws between Panel Rear and Inverter PCB.
14. Remove the Interface wire on the Rear Side of Panel.

3-1-3 Standard Stand Disassembly

1. Remove 5 screws from the Stand Rear
2. Remove 4 screws from the Stand Bottom.
3. Remove Stand Front from the Stand assembly.
4. Remove 2 screws from the Stand assembly.
5. Remove the Stand Rear from the Stand assembly.
6. Remove 5 screws on the Vesa Brkt from the Stand assembly.
7. Remove cover hinge from the Stand assembly.
8. Remove Stand Base from the Stand assembly.

3-1-4 Pivot Multi-media Stand Disassembly (option)

1. Stand the stand assembly with the base close to you.
2. Remove the 4 screws on the back cover of the stand and remove it.
3. Stand the stand assembly upside down.
4. Remove the 4 screws.
5. Disconnect CN805, CN806, CN807, CN808, CN809, CN812 and F1.
6. Remove the Back Cover of the Stand Front assembly.
7. Remove 4 screws on the external adaptor and remove the adaptor.
8. Remove 2 screws between hinge and Stand Body.
9. Remove the hinge
10. Remove 2 screws on Audio main PCB and remove it
11. Remove 2 screws on the Audio Function PCB and remove it.

3-1-5 Angle Pivot Stand Disassembly (option)

1. Remove the cap pivot from the stand assembly.
2. Remove the 4 screws on the hinge assembly.
3. Remove the 4 screws on the Stand Rear

4. Remove the Stand Rear from the Stand assembly.
5. Remove the Stand Front from the Stand assembly.
6. Remove the Neck Rear from the Stand assembly.
7. Remove the 4 Rubbers on the four corner of the Stand Bottom and the 4 screws on the four corner of the Stand Bottom.
8. Remove the 5 stopper hings from the Bracket Bottom.
9. Remove the Stand Base from the Stand Assembly.

3-1-6 Wire frame stand Disassembly (option)

1. Carefully pull the cover hinge.
2. Remove the cover vesa from the Stand assembly.
3. Remove 4 screws on the assembly Bracket assembly.

3-2 Replacement Order of Lamp Assemblies

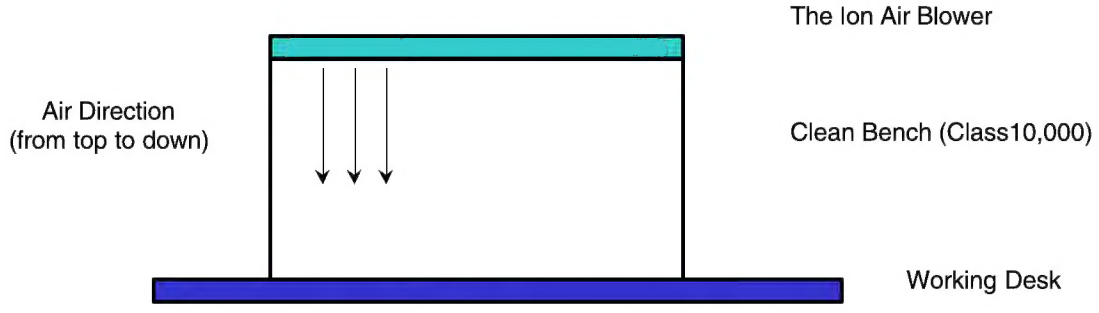
- RN15MSS/RM15MOS (Samsung Panel)

Replacement of Lamp Ass'y (LTM150XS-***)

1. The required equipment for Lamp Replacement

The Ion Air Blower	1ea
Clean Bench (Class10,000)	1ea
PC for Test	1ea

2. Working Desk



SAMSUNG TFT-LCD

Replacement Order of Lamp Assemblies

1) Take apart lamp lead-connectors from the inverter(2EA).

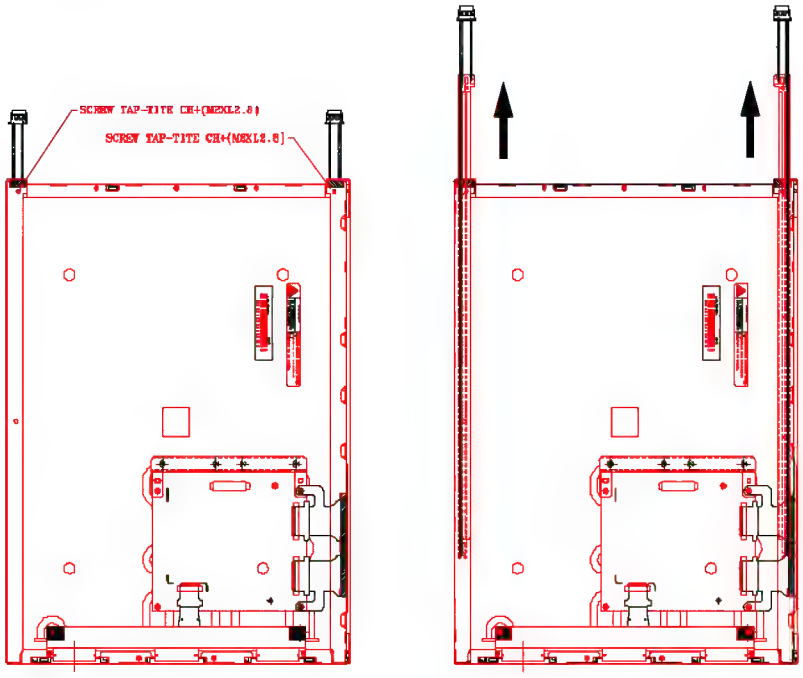
- Replacement of lamp assemblies should be done at the power off state and recommended clean bench condition.

2) Take apart 2 screws which are used to hold the lamp assemblies on.

3) Replace lamp assembly. (Refer to the diagram on the next page.)

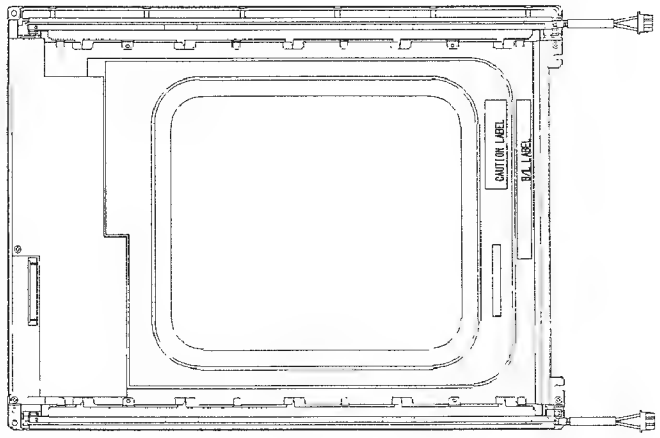
4) Assemble new lamp assembly according to the counter order.

Diagram Of Replacement Order

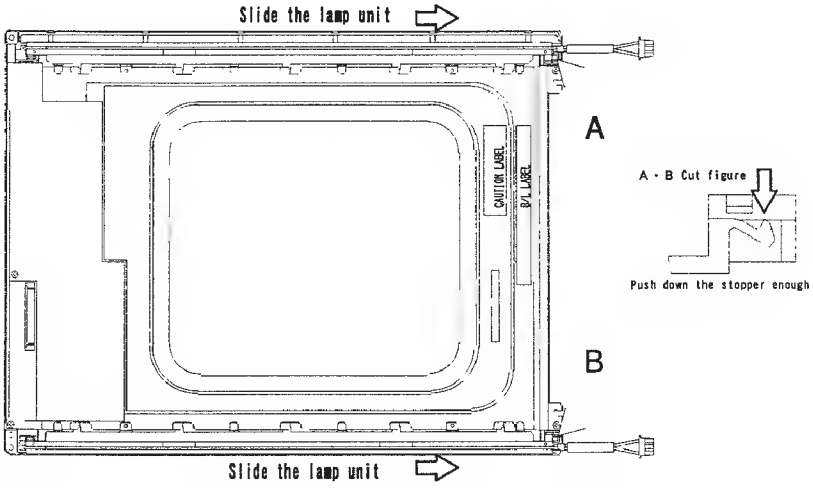


3-3 Replacement Order of Lamp Assemblies

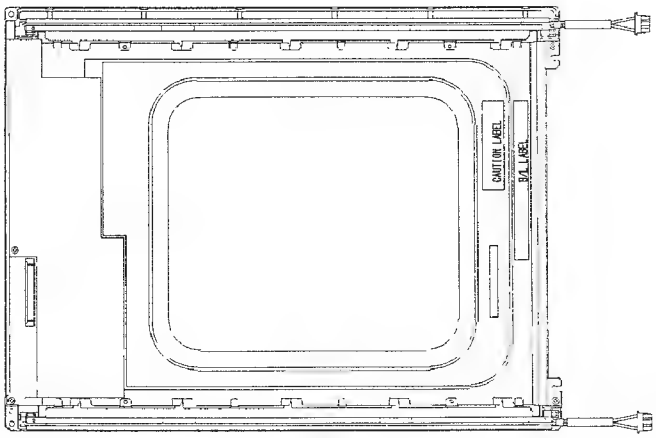
- RN15MST/RM15SOT (Toshiba Panel)



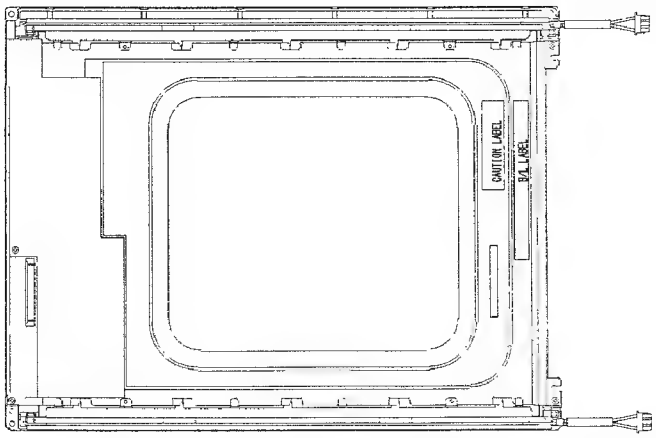
1. After confirm there is nothing on the desk
   Turn the LCD module over and put it on a flat desk set to the ground.



2. Push down the stopper and slide the lamp unit.



3. Please take out the lamp units from the LCD module.



4. Please fix the new lamp units on the LCD module : opposite process 2 and 3

* Replacement of lamp unit should be done at the power off state and rcommended clean bench condition.

3-4 Reassembly

Reassembly procedures are in the reverse order of Disassembly procedures.

Memo

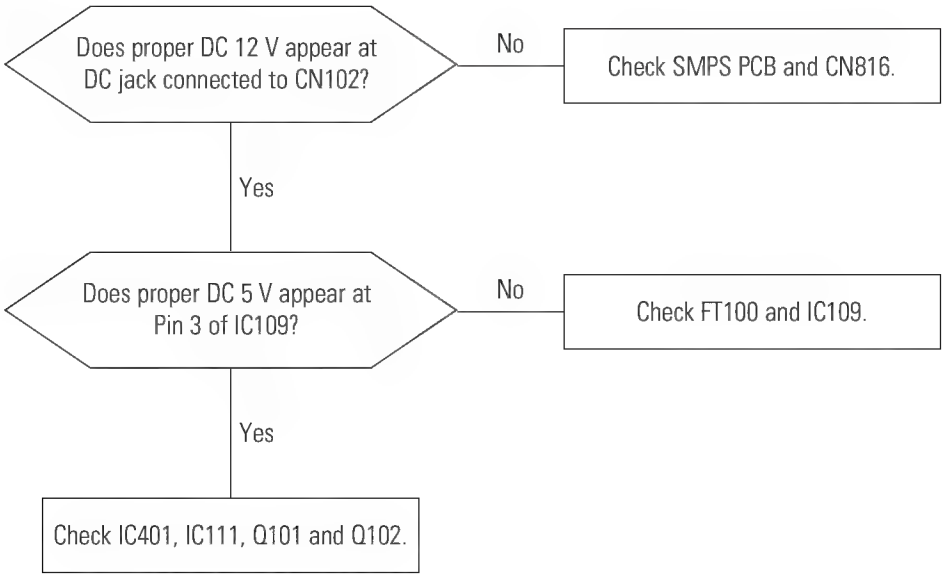
4 Troubleshooting

Notes: 1. Before troubleshooting, setup the PC's display as below.
- Resolution: 1024 x 768
- H-frequency: 48 kHz
- V-frequency: 60 Hz

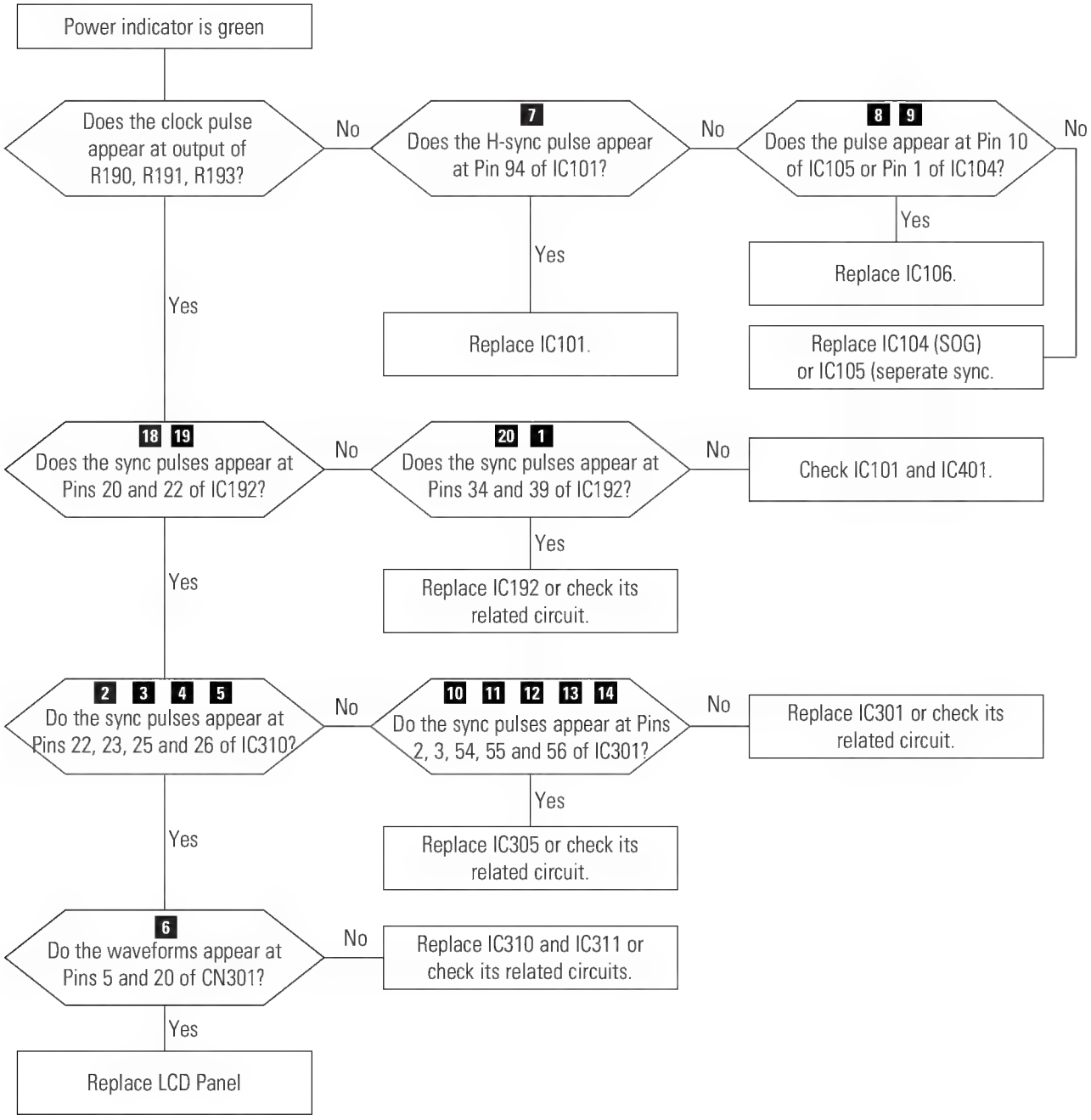
2. If no picture appears, make sure the power cord is correctly connected.
3. Check the following circuits.
- No raster appears: Audio PCB, SMPS PCB, Main PCB
- 12V develop but no screen: Main PCB
- 12V does not develop: Audio PCB, SMPS PCB

4. If you push and hold the "EXIT" button for more than 5 seconds, the monitor automatically turns back to the factory preset.

4-1 No Power

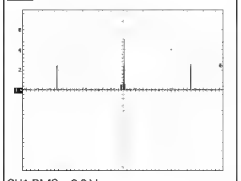

Does proper DC 12 V appear at DC jack connected to CN102?
No
Check SMPS PCB and CN816.
Yes
Does proper DC 5 V appear at Pin 3 of IC109?
No
Check FT100 and IC109.
Yes
Check IC401, IC111, Q101 and Q102.

4-2 No Video


Power indicator is green
Does the clock pulse appear at output of R190, R191, R193?
No
7
Does the H-sync pulse appear at Pin 94 of IC101?
No
8 9
Does the pulse appear at Pin 10 of IC105 or Pin 1 of IC104?
No
Yes
Replace IC106.
Yes
Replace IC101.
Replace IC104 (SOG) or IC105 (seperate sync.
Yes
18 19
Does the sync pulses appear at Pins 20 and 22 of IC192?
No
20 1
Does the sync pulses appear at Pins 34 and 39 of IC192?
No
Check IC101 and IC401.
Yes
Replace IC192 or check its related circuit.
Yes
2 3 4 5
Do the sync pulses appear at Pins 22, 23, 25 and 26 of IC310?
No
10 11 12 13 14
Do the sync pulses appear at Pins 2, 3, 54, 55 and 56 of IC301?
No
Replace IC301 or check its related circuit.
Yes
Replace IC305 or check its related circuit.
Yes
6
Do the waveforms appear at Pins 5 and 20 of CN301?
No
Replace IC310 and IC311 or check its related circuits.
Yes
Replace LCD Panel

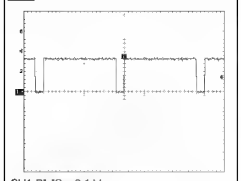
WAVEFORMS

1 IC192 #39



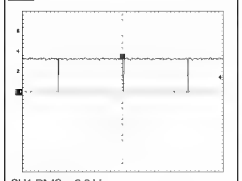
CH1 RMS – 3.6 V

2 IC310 #22



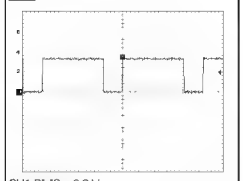
CH1 RMS – 3.1 V

3 IC310 #23



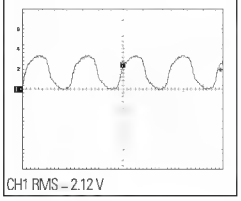
CH1 RMS – 2.3 V

4 IC310 #25



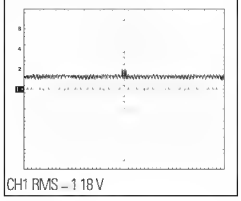
CH1 RMS – 2.8 V

5 IC310 #26



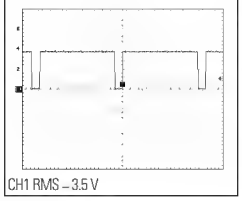
CH1 RMS – 2.12 V

6 CN301 #5~20



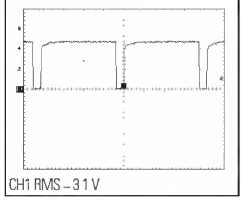
CH1 RMS – 1.18 V

7 IC101 #94



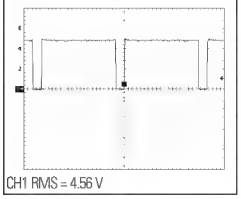
CH1 RMS – 3.5 V

8 IC105 #10



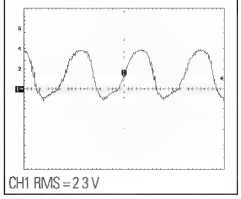
CH1 RMS – 3.1 V

9 IC104, #1



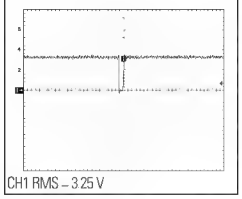
CH1 RMS = 4.56 V

10 IC301 #2



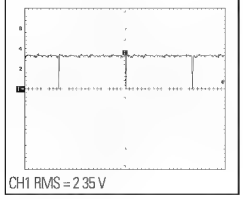
CH1 RMS = 2.3 V

11 IC301 #3



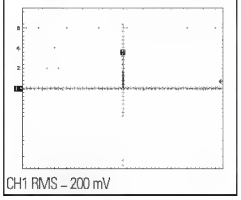
CH1 RMS – 3.25 V

12 IC301 #54



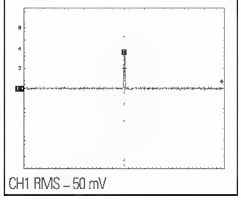
CH1 RMS = 2.35 V

13 IC301, #55



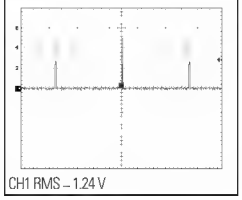
CH1 RMS – 200 mV

14 IC301 #56



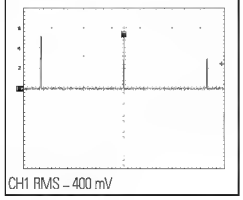
CH1 RMS – 50 mV

18 IC192 #20



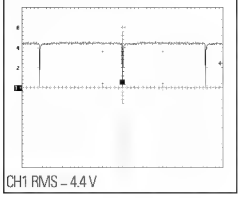
CH1 RMS – 1.24 V

19 IC192 #22



CH1 RMS – 400 mV

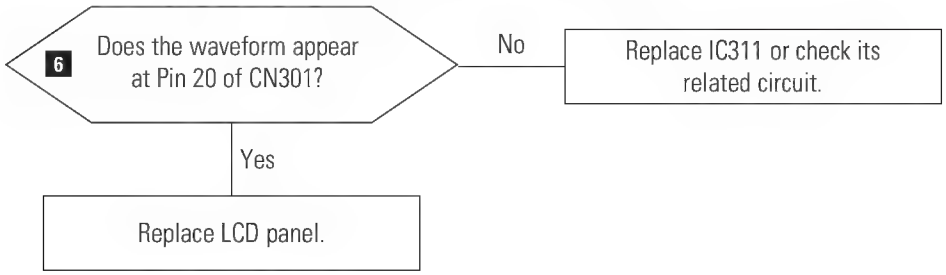
20 IC192 #34



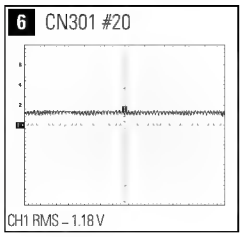
CH1 RMS – 4.4 V

4-3 No Video of Alternate Vertical Line

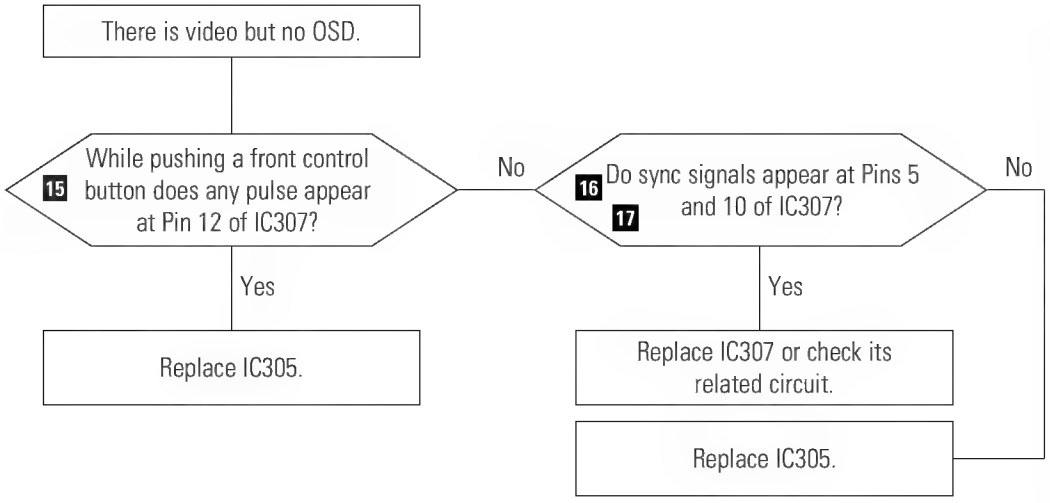
One or more even or odd vertical lines do not display.



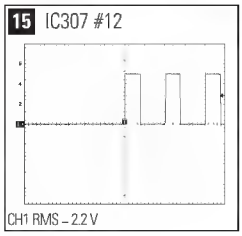
WAVEFORMS

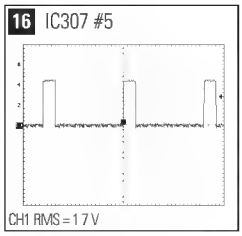


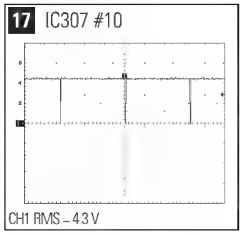
4-4 No OSD



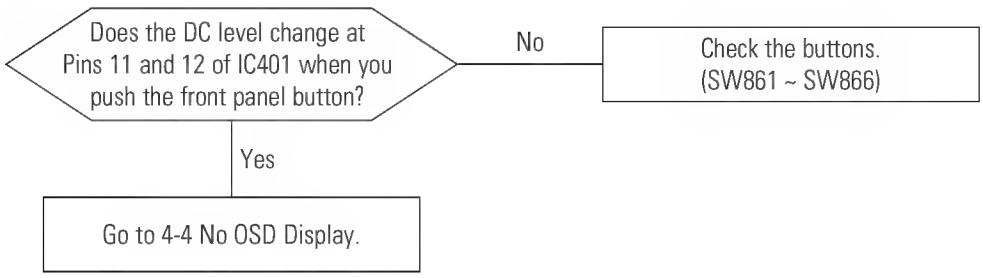
WAVEFORMS



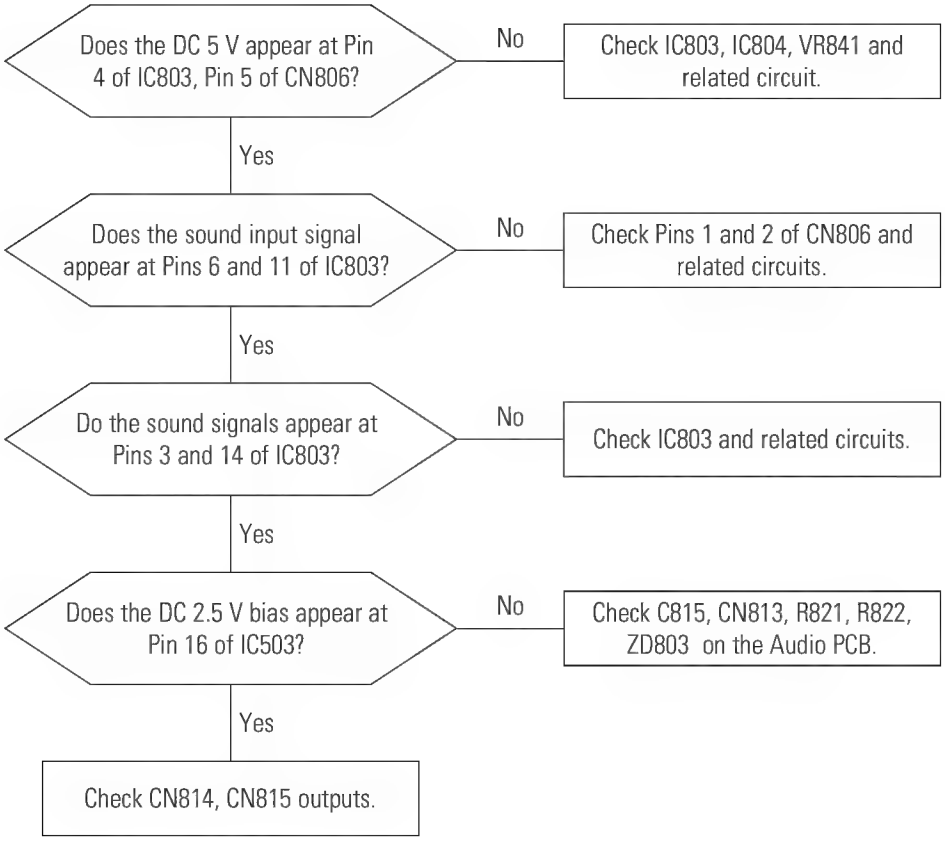




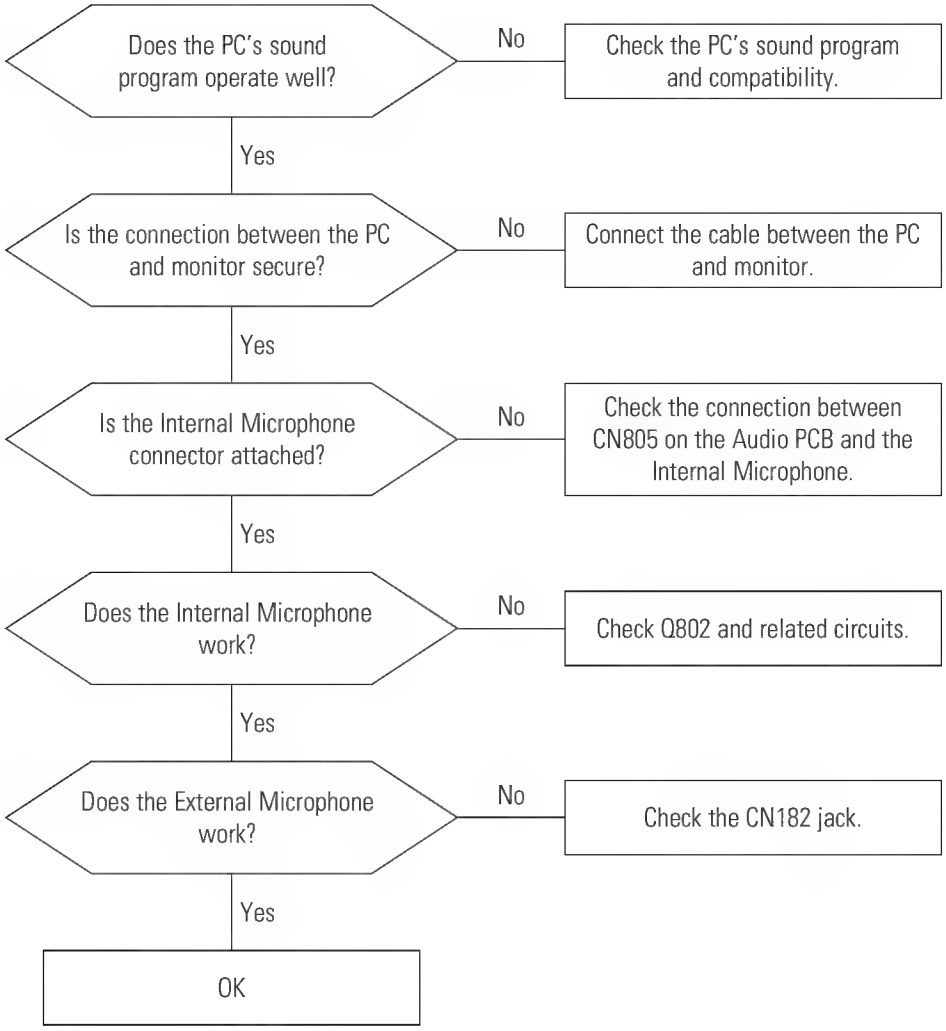
4-5 User Controls Don't Work


Does the DC level change at Pins 11 and 12 of IC401 when you push the front panel button?
No
Check the buttons. (SW861 ~ SW866)
Yes
Go to 4-4 No OSD Display.

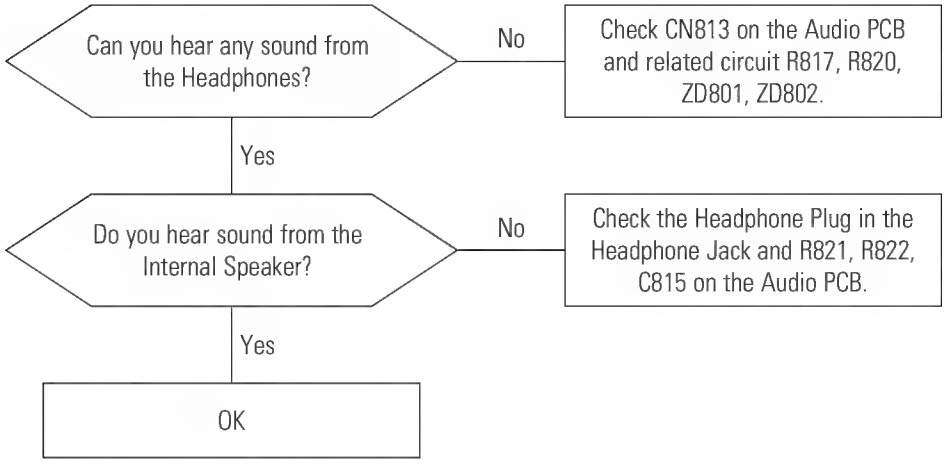
4-6 No Sound


Does the DC 5 V appear at Pin 4 of IC803, Pin 5 of CN806?
No
Check IC803, IC804, VR841 and related circuit.
Yes
Does the sound input signal appear at Pins 6 and 11 of IC803?
No
Check Pins 1 and 2 of CN806 and related circuits.
Yes
Do the sound signals appear at Pins 3 and 14 of IC803?
No
Check IC803 and related circuits.
Yes
Does the DC 2.5 V bias appear at Pin 16 of IC503?
No
Check C815, CN813, R821, R822, ZD803 on the Audio PCB.
Yes
Check CN814, CN815 outputs.

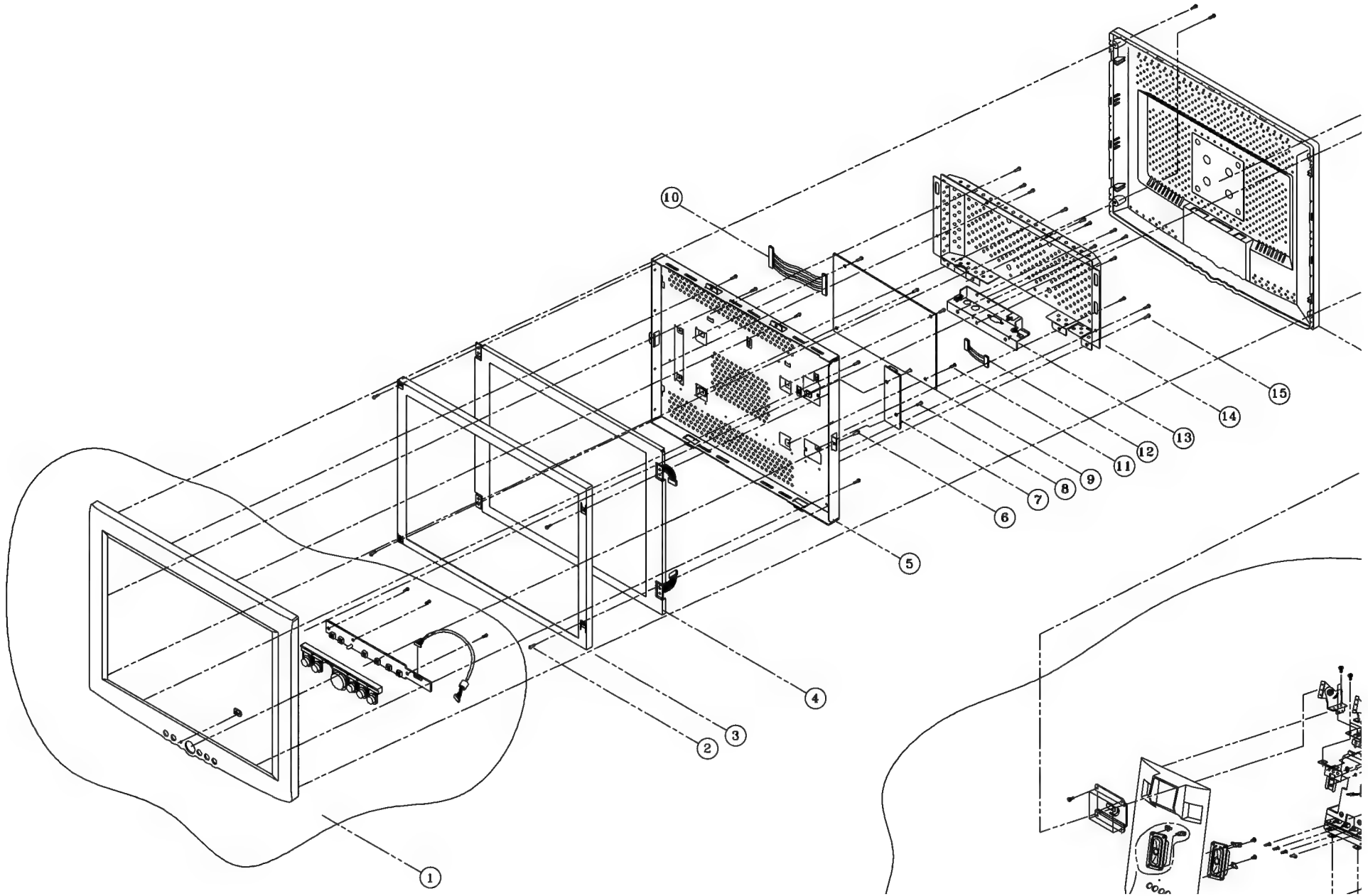
4-7 Microphones Don't Work



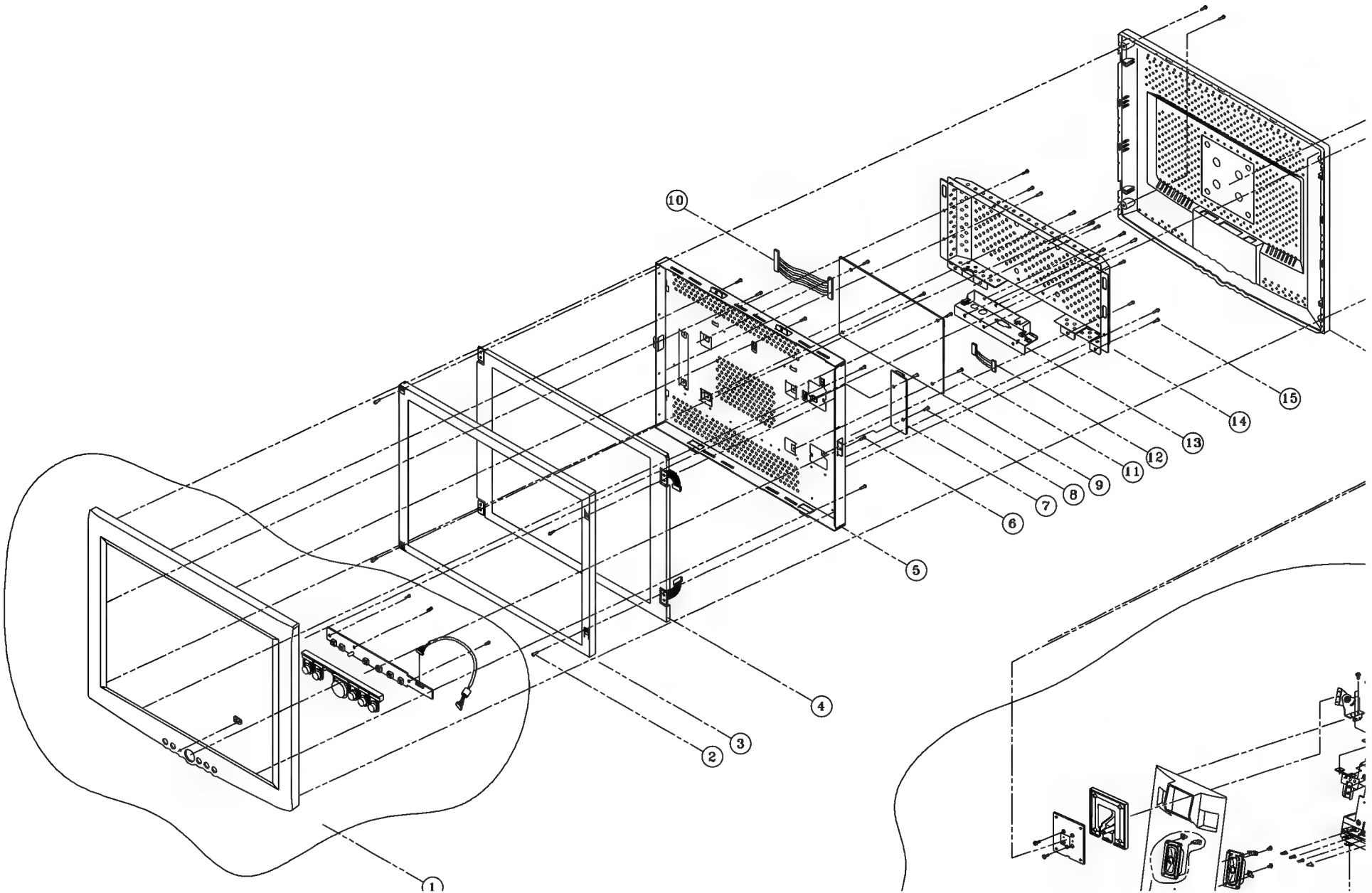
4-8 Headphones Don't Work


Can you hear any sound from the Headphones?
No
Check CN813 on the Audio PCB and related circuit R817, R820, ZD801, ZD802.
Yes
Do you hear sound from the Internal Speaker?
No
Check the Headphone Plug in the Headphone Jack and R821, R822, C815 on the Audio PCB.
Yes
OK

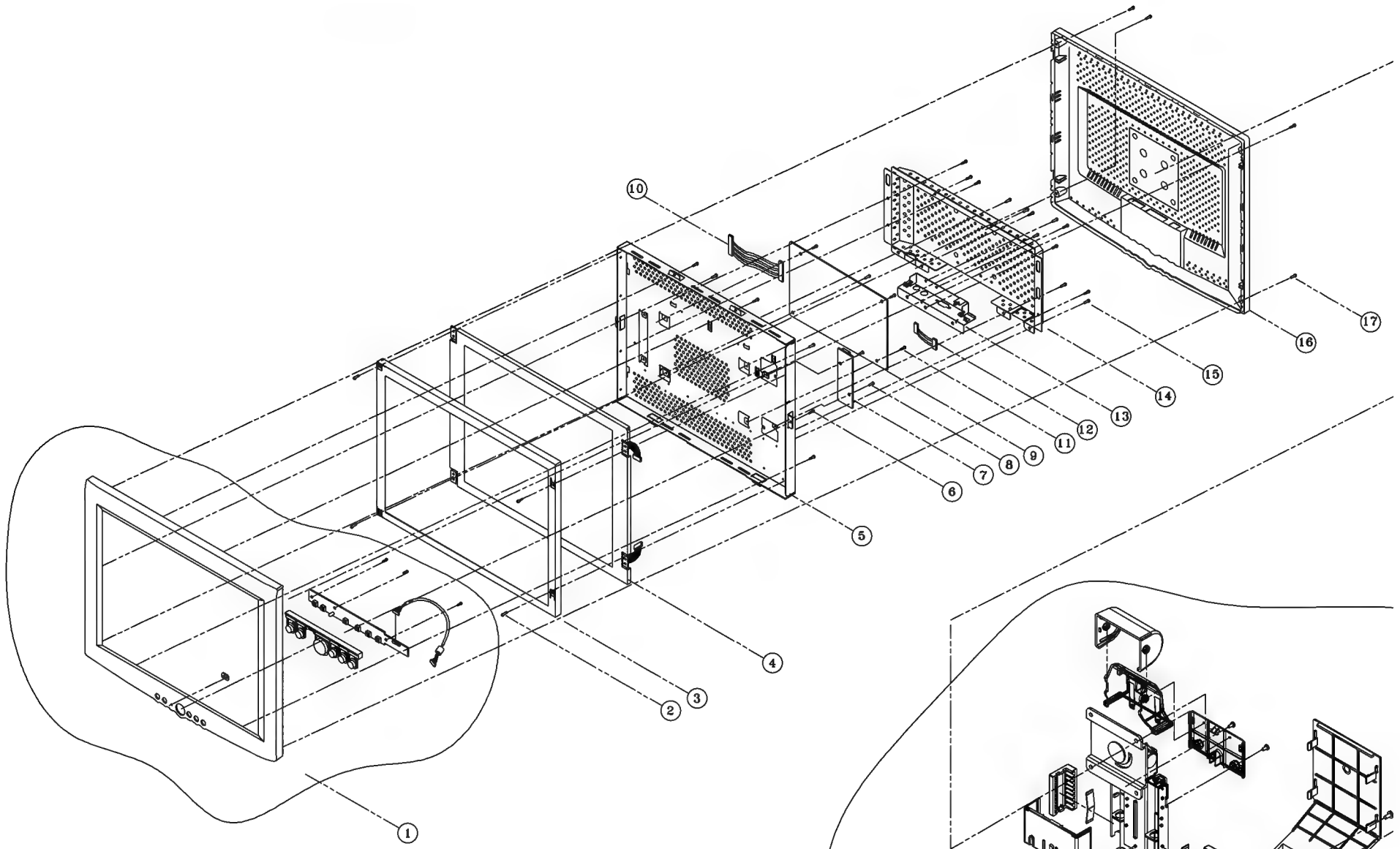
5-2 Multimedia Pivot-base RN15MST (TOSHIBA PANEL)



5-4 Multimedia-base RN15MST (TOSHIBA PANEL)

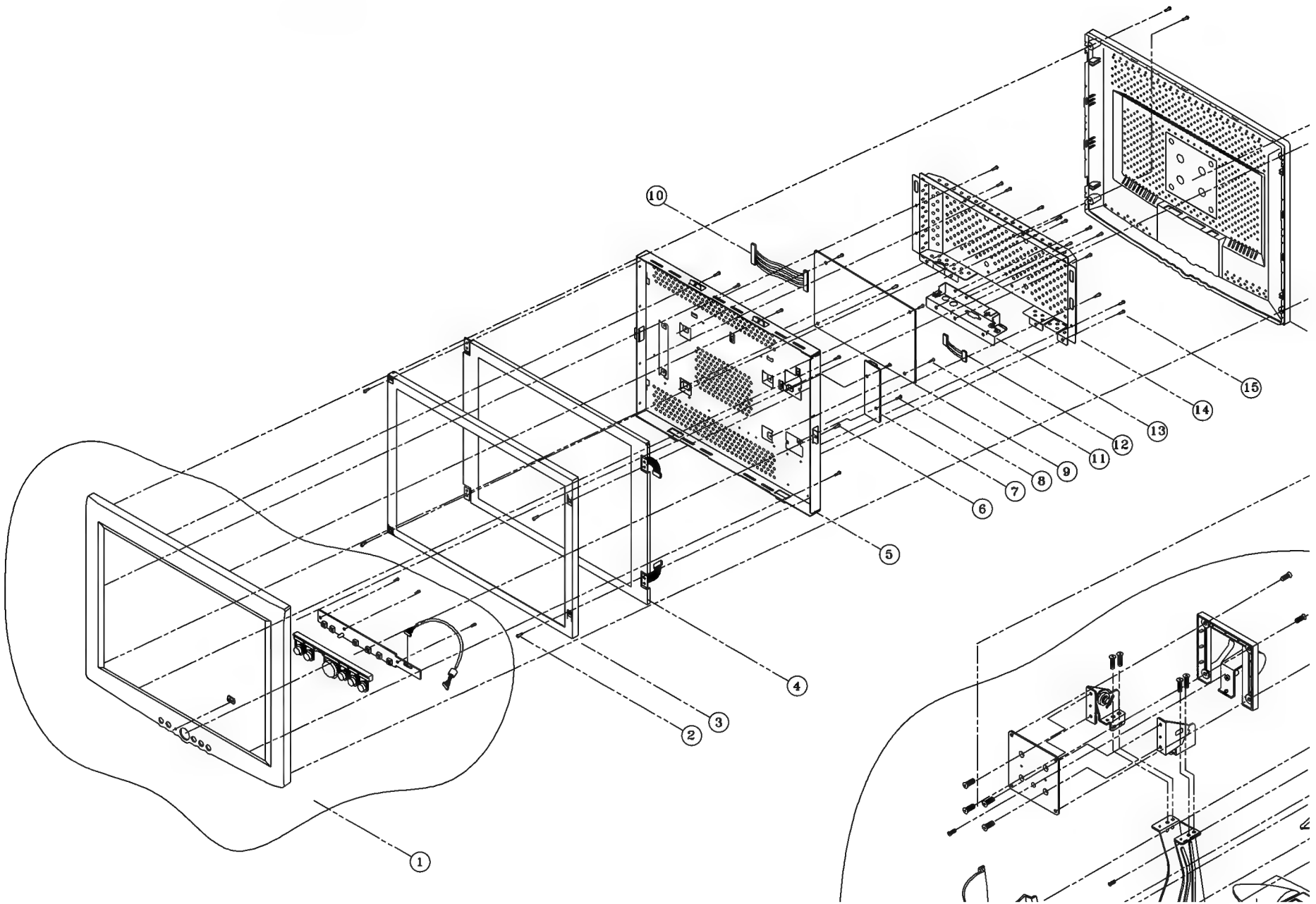


5-6 Pivot-base RN15MST (TOSHIBA PANEL)

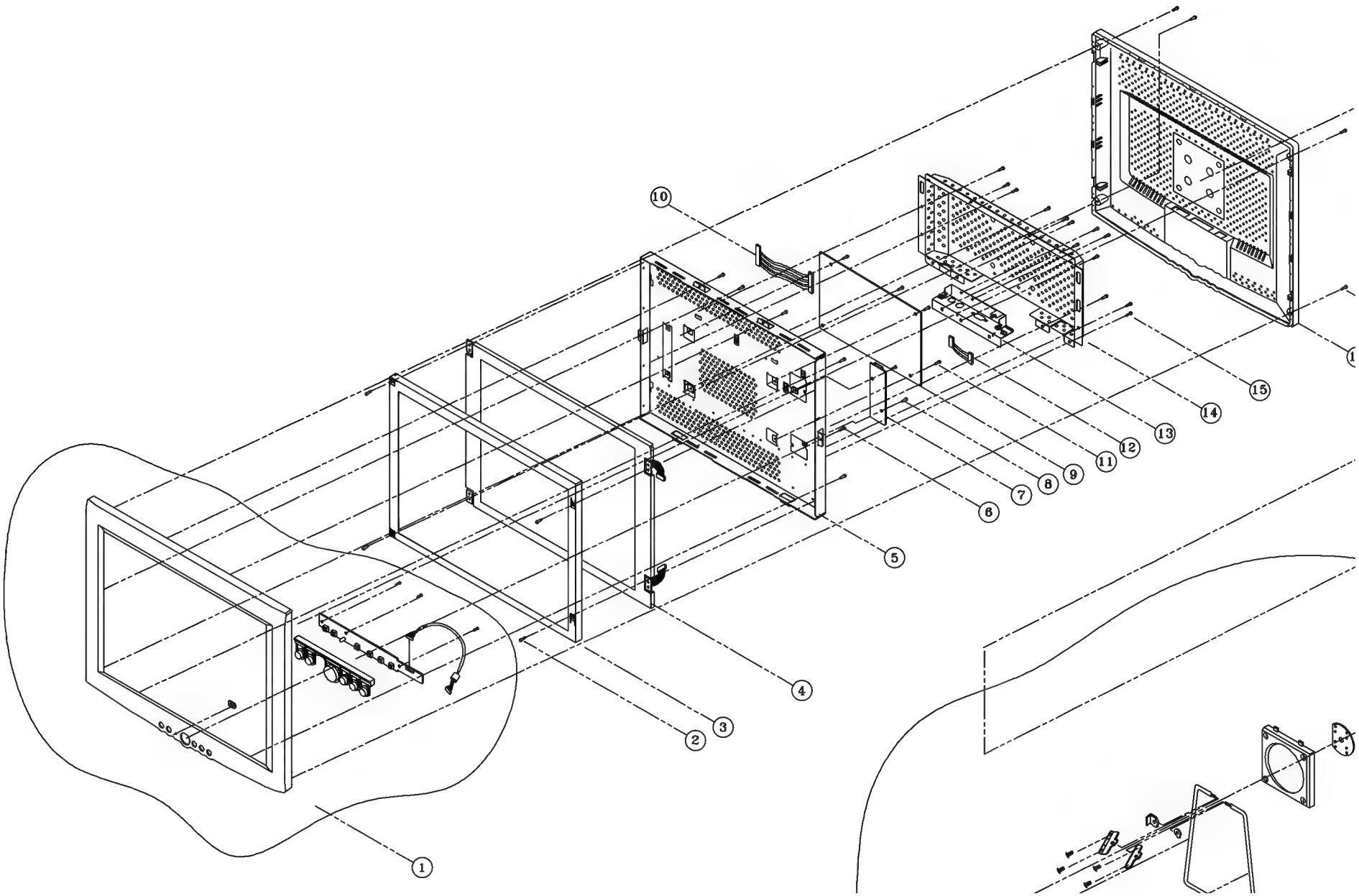


18	UNIT STAND PIVOT	BN75-00041A	-	1
17	SCREW TAP TITE	6003-000135	BH,+,8,M3,L12	4
16	COVER REAR	BN72-00007A	ABS+PC, SV, 1V16 (PHOSPHORUS, 1)	1

5-8 Simple-base RN15MST (TOSHIBA PANEL)



5-10 Wire frame-base RN15MST (TOSHIBA PANEL)



6 Electrical Parts List

6-1 Main PCB Parts

Loc. No.	Code No.	Description	Specification	Remarks
BD101	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD102	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD103	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD104	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD105	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD401	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD402	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD403	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
BD404	2703-001334	INDUCTOR-SMD	1.5uH,10%,2x1.25x0.85mm	
C100	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C101	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C102	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C103	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C104	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C105	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C106	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C107	2203-000239	C-CERAMIC,CHIP	0.1nF,5%,50V,NPO,TP,2012	
C108	2203-000239	C-CERAMIC,CHIP	0.1nF,5%,50V,NPO,TP,2012	
C109	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C110	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C111	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C112	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C113	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C114	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C115	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C116	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C117	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C118	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C119	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C120	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C121	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C122	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C123	2203-000609	C-CERAMIC,CHIP	22NF,10%,50V,X7R,TP,2012	
C124	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C125	2203-000609	C-CERAMIC,CHIP	22NF,10%,50V,X7R,TP,2012	
C126	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C127	2203-000609	C-CERAMIC,CHIP	22NF,10%,50V,X7R,TP,2012	
C128	2203-000151	C-CERAMIC,CHIP	1.5nF,5%,50V,NPO,TP,2012	
C129	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C130	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C131	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C132	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C133	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C134	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C135	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
C136	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C137	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C138	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C139	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C140	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C141	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C142	2203-001391	C-CERAMIC,CHIP	150nF,10%,25V,X7R,TP,2012	
C143	2203-000455	C-CERAMIC,CHIP	1nF,5%,50V,NPO,TP,2012	
C144	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C145	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C146	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C147	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C148	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C149	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C150	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C151	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C157	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C158	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C159	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C160	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C161	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C163	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C165	2409-000124	C-ORGANIC	100uF,10%,16V,LZ,BK,8x10.5,3.5	
C167	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C168	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C169	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C172	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C173	2409-000124	C-ORGANIC	100uF,10%,16V,LZ,BK,8x10.5,3.5	
C175	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C176	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C177	2409-000124	C-ORGANIC	100uF,10%,16V,LZ,BK,8x10.5,3.5	
C180	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C181	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C182	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C183	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C184	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C185	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C186	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C187	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C188	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C189	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C190	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C192	2203-000151	C-CERAMIC,CHIP	1.5nF,5%,50V,NPO,TP,2012	
C193	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C194	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C195	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C196	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
C197	2203-000683	C-CERAMIC,CHIP	27pF,5%,50V,NPO,TP,2012	
C198	2203-000683	C-CERAMIC,CHIP	27pF,5%,50V,NPO,TP,2012	
C199	2203-000683	C-CERAMIC,CHIP	27pF,5%,50V,NPO,TP,2012	
C301	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C302	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C303	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C304	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C305	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C306	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C307	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C308	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C309	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C310	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C311	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C312	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C313	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C314	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C315	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C316	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C317	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C318	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C319	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C320	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C321	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C322	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C323	2203-001723	C-CERAMIC,CHIP	4.7pF,5%,50V,NPO,TP,2012	
C324	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C325	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C326	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C327	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C328	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C329	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C330	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C331	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C332	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C333	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C334	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C335	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C336	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C337	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C338	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C339	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C340	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C341	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C342	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C343	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C344	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
C345	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C346	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C347	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C348	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C349	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C350	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C351	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C352	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C353	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C354	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C355	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C356	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C357	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C358	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C359	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C360	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C361	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C363	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C364	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C365	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C367	2203-000818	C-CERAMIC,CHIP	0.033nF,5%,50V,NPO,TP,2012	
C368	2203-000818	C-CERAMIC,CHIP	0.033nF,5%,50V,NPO,TP,2012	
C369	2404-000151	C-TA,CHIP	1uF,20%,16V,TP,3216	
C370	2404-000151	C-TA,CHIP	1uF,20%,16V,TP,3216	
C371	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C372	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C389	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C390	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C401	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C402	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C403	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C404	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C405	2203-000455	C-CERAMIC,CHIP	1nF,5%,50V,NPO,TP,2012	
C407	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C408	2402-000168	C-AL,SMD	100uF,20%,16V,GP,TP,8.3x8.3x6.3mm	
C409	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C410	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C411	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C412	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C413	2203-000555	C-CERAMIC,CHIP	20pF,5%,50V,NPO,TP,2012	
C414	2203-000555	C-CERAMIC,CHIP	20pF,5%,50V,NPO,TP,2012	
C415	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C416	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C417	2203-000239	C-CERAMIC,CHIP	0.1nF,5%,50V,NPO,TP,2012	
C473	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C474	2203-000204	C-CERAMIC,CHIP	100NF,10%,25V,X7R,TP,2012	
C496	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
C497	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C498	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C499	2203-000260	C-CERAMIC,CHIP	10NF,10%,50V,X7R,TP,2012	
C501	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C502	2203-000455	C-CERAMIC,CHIP	1nF,5%,50V,NPO,TP,2012	
C509	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C510	2203-000455	C-CERAMIC,CHIP	1nF,5%,50V,NPO,TP,2012	
C511	2404-000123	C-TA,CHIP	10uF,20%,16V,TP,6032,2.9mm	
C512	2203-000455	C-CERAMIC,CHIP	1nF,5%,50V,NPO,TP,2012	
CFT301	2901-001115	FILTER-EMI SMD	50VDC,500mADC,20pF,3.1x1.6x2	
CFT317	2901-001112	FILTER-EMI SMD	50VDC,1.0ADC,85pF+-20%,3.2x1	
CFT318	2901-001115	FILTER-EMI SMD	50VDC,500mADC,20pF,3.1x1.6x2	
CL101	BN27-20001C	COIL-SMD		
CL102	BN27-20001A	COIL-CHOKE		
CN101	3701-001129	CONNECTOR-DSUB	15P,3R,FEMALE,ANGLE,AUF	
CN102	3722-000117	JACK-DC POWER	3P,3.5mm,AG,BLK,NO	
CN103	3711-000556	CONNECTOR-HEADER	BOX,12P,1R,1.25mm,SMD-A,SN	
CN301	3711-003161	CONNECTOR-HEADER	BOX,20P,1R,1.25mm,ANGLE,SN	
CN401	3711-002049	CONNECTOR-HEADER	BOX,6P,1R,1.25mm,SMD-A,SN	
CN402	3711-000056	CONNECTOR-HEADER	BOX,2P,1R,2.5mm,ANGLE,SN	
D101	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
D102	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
D103	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
D109	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
D113	0402-000553	DIODE-RECTIFIER	SS24,40V,2.0A,DO-214AA	
D114	0402-000553	DIODE-RECTIFIER	SS24,40V,2.0A,DO-214AA	
D402	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
D404	0401-001056	DIODE-SWITCHING	MMBD4148SE,75V,600mA,SOT-23,TP	
FT100	3301-001145	CORE-FERRITE BEAD	AB,4.5x1.6x1.6mm,-	
FT101	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT102	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT103	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT120	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT122	2901-000172	FILTER-EMI ON BOARD	50V,10A,-,12x11x13mm,BK	
FT301	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT306	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT313	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT314	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT316	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT317	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT318	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT319	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT321	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT322	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT323	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT324	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT325	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	

Loc. No.	Code No.	Description	Specification	Remarks
FT326	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT327	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT328	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT329	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT330	2901-001113	FILTER-EMI SMD	25VDC,0.2A,35pF+-20%,2x1.25x	
FT336	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT415	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT521	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT529	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
FT531	2901-001114	FILTER-EMI SMD	25VDC,2.0ADC,100nF,3.2x1.6x1	
IC101	1002-001099	IC-A/D CONVERTER	TDA8752,8BIT,QFP,100P,+-0.5,	
IC102	1203-001488	IC-POSI.FIXED REG.	7805,T0-252,3P,PLASTIC,4.8/5	
IC103	1203-001488	IC-POSI.FIXED REG.	7805,T0-252,3P,PLASTIC,4.8/5	
IC104	1204-000292	IC-VIDEO SYSTEM	LM1881M,SOP,8P,150MIL,PLASTIC,	
IC105	0803-000117	IC-TTL	74F14,INVERTER,SOP,14P,150MIL,	
IC106	0803-000122	IC-TTL	74F125,BUFFER,SOP,14P,150MIL,Q	
IC107	1203-001448	IC-POSI.FIXED REG.	2596,TO-263,5P,PLASTIC,4.750	
IC108	1203-001447	IC-POSI.FIXED REG.	2596,TO-263,5P,PLASTIC,3.135	
IC109	1203-001488	IC-POSI.FIXED REG.	7805,T0-252,3P,PLASTIC,4.8/5	
IC111	0505-000275	FET-SILICON	SI4435DY,P,-30V,+-8.0A,0.02ohm	
IC115	1203-001538	IC-POSI.ADJUST REG.	431,SOT-89,3P,PLASTIC,2.47/3	
IC151	0803-000275	IC-TTL	74F32,OR GATE,SOP,14P,150MIL,Q	
IC192	BN13-00002A	IC-ASIC	XB(LCD),FG60A018HM_L18,QFP,48P,AUTO	
IC301	1205-001407	IC-BUFFER	GMFC1,QFP,208P,PLASTIC,3.6V,	
IC302	1105-001165	IC-DRAM	416S1020,512Kx16BITx2,TSOP,50P	
IC303	1105-001165	IC-DRAM	416S1020,512Kx16BITx2,TSOP,50P	
IC304	1105-001165	IC-DRAM	416S1020,512Kx16BITx2,TSOP,50P	
IC305	0904-001222	IC-GRAPHIC CONT.	GMZ1,QFP,208P,65MHz,TR,P	
IC307	BN09-00001A	IC-OSD PROCESSOR	LCD,MTV121P-31,16P	
IC309	0505-001170	FET-SILICON	SI9933ADY-T1,P,-20V,3.4A,0.075OHM,2W,SO-8	
IC401	0903-001063	IC-MICROCONTROLLER	72E75,8BIT,DIP,42P,600MIL,24MH	
IC401_SOCK	3704-001071	SOCKET-IC	42P,DIP,SN,1.778mm	
IC402	1203-001109	IC-VOL. DETECTOR	7045,SOT-89,3P,PLASTIC,4.3/4	
IC403	1103-001164	IC-EEPROM	24LC21A,128X8BIT,SOP,8P,150MIL,5V,10%, PLASTIC,0 TO +70C,100UA,CMOS,TP	
IC404	1103-001023	IC-EEPROM	24C08,1028x8BIT,SOP,8P,150MIL,	
IC406	0803-000122	IC-TTL	74F125,BUFFER,SOP,14P,150MIL,Q	
IC501	1205-001740	IC-TRANSMITTER	DS90C385,TSSOP,56P,240MIL,PLASTIC,4V, 1.63W,10 TO +70C,ST,FPD LINK-85MHZ(LVDS)	
L102	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L151	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L152	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L160	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L170	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L171	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L172	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L193	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	

Loc. No.	Code No.	Description	Specification	Remarks
L403	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L406	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
L407	2703-001070	INDUCTOR-SMD	100uH,10%,4.5x3.2x3.2mm	
Q101	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
Q102	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
Q301	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
Q302	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
Q401	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
Q402	0501-002080	TR-SMALL SIGNAL	2SC2412K,NPN,200mW,SOT-23,TP,1	
R101	2007-001166	R-CHIP	75OHM,5%,1/10W,DA,TP,2012	
R102	2007-001166	R-CHIP	75OHM,5%,1/10W,DA,TP,2012	
R103	2007-001166	R-CHIP	75OHM,5%,1/10W,DA,TP,2012	
R104	2007-000781	R-CHIP	33OHM,5%,1/10W,DA,TP,2012	
R105	2007-000781	R-CHIP	33OHM,5%,1/10W,DA,TP,2012	
R106	2007-000781	R-CHIP	33OHM,5%,1/10W,DA,TP,2012	
R107	2007-000493	R-CHIP	2.2KOHM,5%,1/10W,DA,TP,2012	
R110	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R115	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R116	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R117	2007-000023	R-CHIP	120OHM,5%,1/10W,DA,TP,2012	
R124	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R125	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R127	2007-000300	R-CHIP	10KOHM,5%,1/10W,DA,TP,2012	
R129	2007-000822	R-CHIP	390OHM,5%,1/10W,DA,TP,2012	
R130	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R131	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R134	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R136	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R137	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R138	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R139	2007-000221	R-CHIP	1.2KOHM,5%,1/10W,DA,TP,2012	
R142	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R143	2007-000221	R-CHIP	1.2KOHM,5%,1/10W,DA,TP,2012	
R190	2007-000029	R-CHIP	0OHM,5%,1/10W,DA,TP,2012	
R191	2007-000029	R-CHIP	0OHM,5%,1/10W,DA,TP,2012	
R192	2007-001113	R-CHIP	680KOHM,5%,1/10W,DA,TP,2012	
R193	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R194	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R195	2007-000572	R-CHIP	220OHM,5%,1/10W,DA,TP,2012	
R196	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R197	2007-000029	R-CHIP	0OHM,5%,1/10W,DA,TP,2012	
R198	2007-000029	R-CHIP	0OHM,5%,1/10W,DA,TP,2012	
R199	2007-000029	R-CHIP	0OHM,5%,1/10W,DA,TP,2012	
R301	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R302	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R303	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R305	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
R306	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R307	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R308	2007-000282	R-CHIP	100KOHM,5%,1/10W,DA,TP,2012	
R310	2007-000300	R-CHIP	10KOHM,5%,1/10W,DA,TP,2012	
R311	2007-000282	R-CHIP	100KOHM,5%,1/10W,DA,TP,2012	
R312	2007-000300	R-CHIP	10KOHM,5%,1/10W,DA,TP,2012	
R314	2007-000593	R-CHIP	22OHM,5%,1/10W,DA,TP,2012	
R316	2007-000766	R-CHIP	330OHM,5%,1/10W,DA,TP,2012	
R317	2007-000572	R-CHIP	220OHM,5%,1/10W,DA,TP,2012	
R321	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R401	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R402	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R403	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R404	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R405	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R406	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R407	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R408	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R409	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R410	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R412	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R413	2007-000872	R-CHIP	4.7KOHM,5%,1/10W,DA,TP,2012	
R414	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R415	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R416	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R417	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R418	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R419	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R420	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R421	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R422	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R423	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R424	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R425	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R426	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R427	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R429	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R431	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R432	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R433	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R436	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R437	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R438	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R439	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R440	2007-001166	R-CHIP	75OHM,5%,1/10W,DA,TP,2012	
R441	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R442	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	

Loc. No.	Code No.	Description	Specification	Remarks
R443	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R444	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R445	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R447	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R448	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R449	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R451	2007-000822	R-CHIP	390OHM,5%,1/10W,DA,TP,2012	
R452	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R453	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R454	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R455	2007-000477	R-CHIP	1MOHM,5%,1/10W,DA,TP,2012	
R456	2007-000572	R-CHIP	220OHM,5%,1/10W,DA,TP,2012	
R457	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R458	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R459	2007-000409	R-CHIP	15KOHM,5%,1/10W,DA,TP,2012	
R460	2007-000409	R-CHIP	15KOHM,5%,1/10W,DA,TP,2012	
R461	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R462	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R463	2007-000290	R-CHIP	100OHM,5%,1/10W,DA,TP,2012	
R464	2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	
R465	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
R466	2007-000023	R-CHIP	120OHM,5%,1/10W,DA,TP,2012	
R467	2007-000931	R-CHIP	470OHM,5%,1/10W,DA,TP,2012	
R470	2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	
RA101	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA102	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA103	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA104	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA105	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA106	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA107	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA108	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA109	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA110	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA111	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA112	2011-001015	R-NETWORK	1Kohm,5%,1/16W,L,CHIP,8P,TP	
RA301	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA302	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA303	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA304	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
RA305	2011-000002	R-NETWORK	22ohm,5%,1/16W,L,CHIP,8P,TP	
SW301	BH39-40305U	CBF HARNESS	,52MM,AWG22(0.6PI)	
SW301_S	3710-000001	CONNECTOR-SHUNT	2P,1R,2.54mm,SN	
X301	2804-001217	OSCILLATOR-CLOCK	67MHz,100ppm,10TTL & CMOS(30pF	
X302	2804-001164	OSCILLATOR-CLOCK	85MHz,100ppm,10TTL(15pF),ST,3	
X401	2801-003326	CRYSTAL-SMD	24MHz,30ppm,28-ABX,16pF,50ohm	
ZD101	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	

Loc. No.	Code No.	Description	Specification	Remarks
ZD102	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	
ZD103	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	
ZD104	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	
ZD105	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	
ZD401	0403-000579	DIODE-ZENER	BZX84C5V1,5.1V,5%,200mW,SOT-23	

7-2 Sub PCB Parts

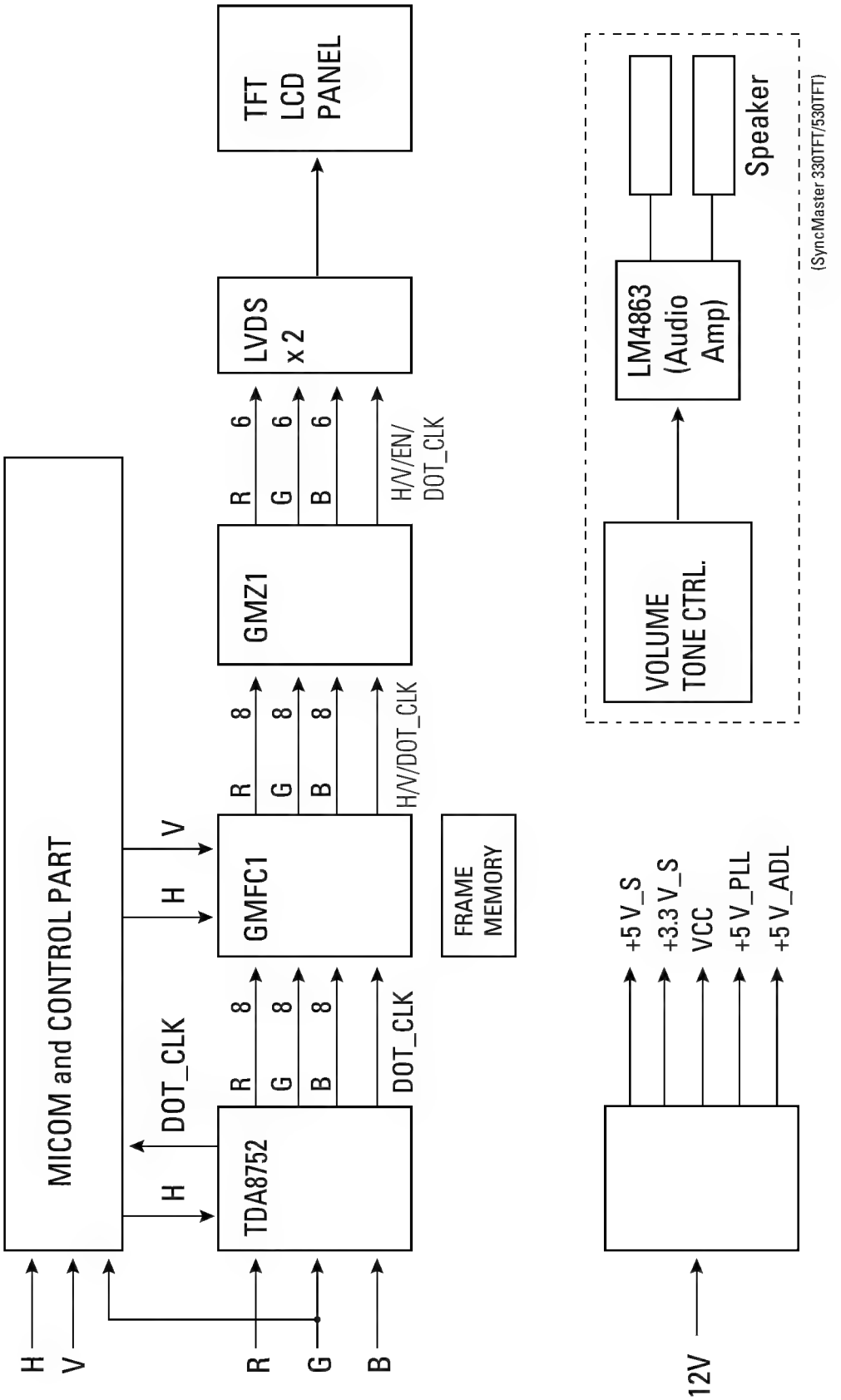
Loc. No.	Code No.	Description	Specification	Remarks
CN801	3711-002050	sIcon12p, CONNECTOR-HEADER	BOX,10P,1R,1.25mm,SMD-A,SN	
OP801	0601-001047	2_led, LED	ROUND,GRN/YEL,2mm,585nm	
R801	2007-000300	res, R-CHIP	10Kohm,5%,1/10W,DA,TP,2012	
R802	2007-000301	res, R-CHIP	10Kohm,5%,1/10W,DA,TP,2013	
R803	2007-000302	res, R-CHIP	10Kohm,5%,1/10W,DA,TP,2014	
SW801	3404-000243	sw_tact2p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.5mm,S	
SW802	3404-000244	sw_tact2p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.6mm,S	
SW803	3404-000245	sw_tact2p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.7mm,S	
SW804	3404-000246	sw_tact3p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.8mm,S	
SW805	3404-000247	sw_tact4p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.9mm,S	
SW806	3404-000248	sw_tact5p, SWITCH-TACT	15V,20mA,160gf+-50gf,6x3.10mm,S	

Others

Loc. No.	Code No.	Description	Specification
LCD	BN07-00005A	LCD-PANNEL	LTM150XS-L02,331.3*257.9*15.9,TN VERTICAL STRIPE,0.297*0.297
P/CORD	BH39-10307X	CBF-POWER/CORD	DET,H05VV-F,250V/6A,IVY,1830MM
S/CABLE	BN39-00030A	CBF-SIGNAL	DETACHABLE,1830MM,15P/15P,2990,D-SUB-MALE
PROCESS-PBA UNIT	BN94-00014C	ASSY,PCB-ST	RN15MS-XGD1/0000,EDC,EUROPE
B/D ASS'Y CODE	BN98-00005C	ASSY,PCB/MAIN-ST	RN15MS-XGD1/0000,EDC,EUROPE

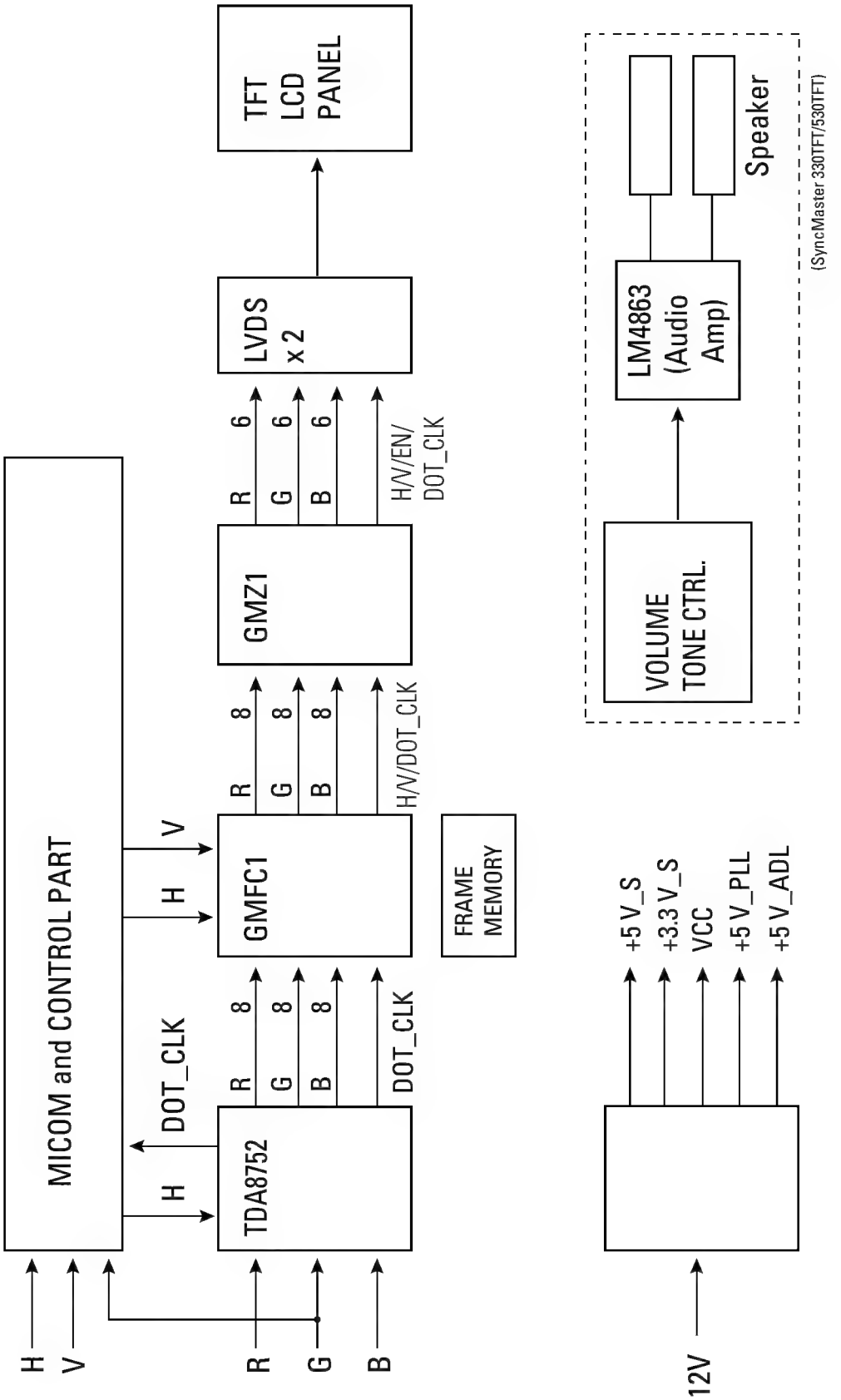
Memo

7 Block Diagram



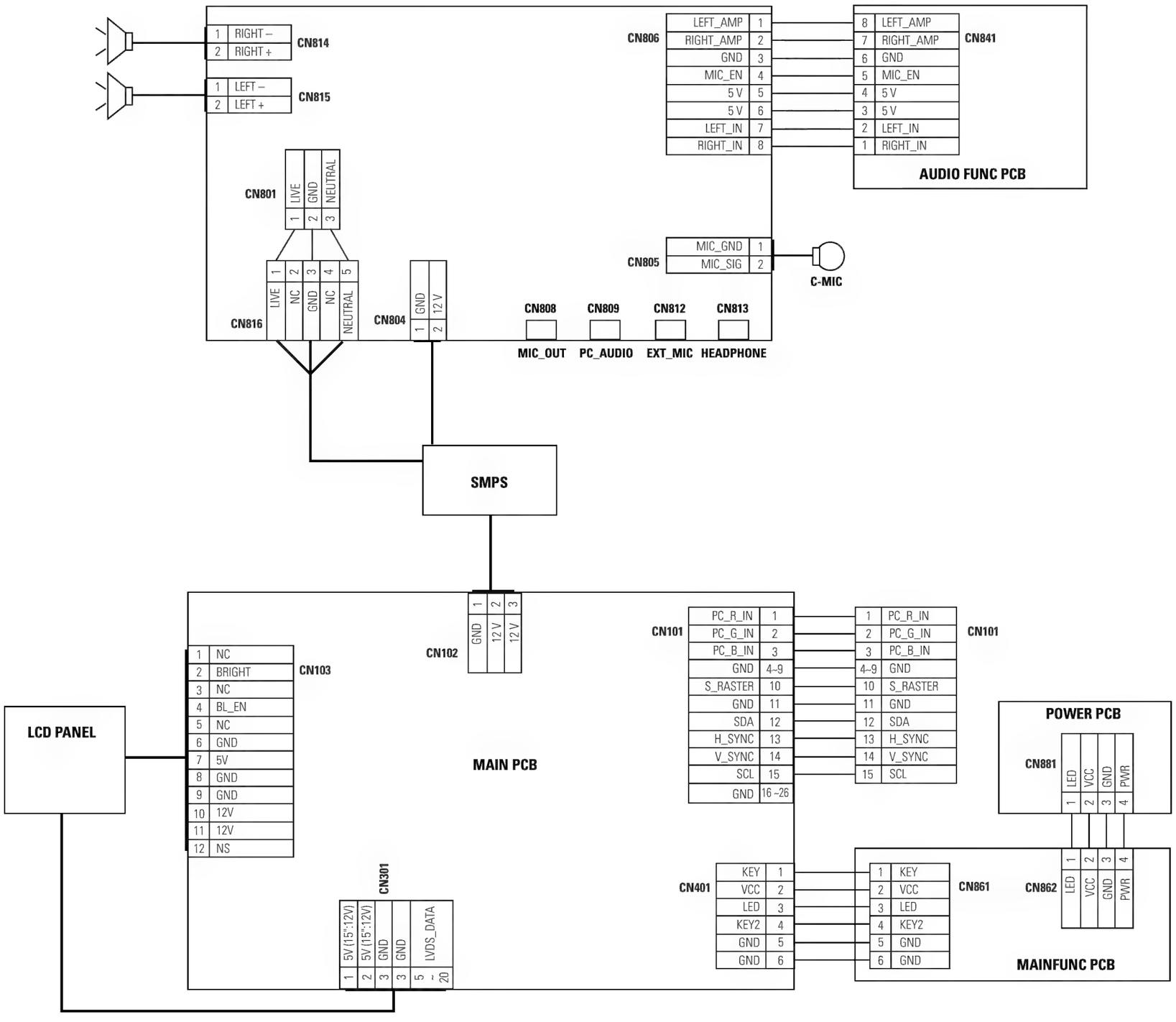
Memo

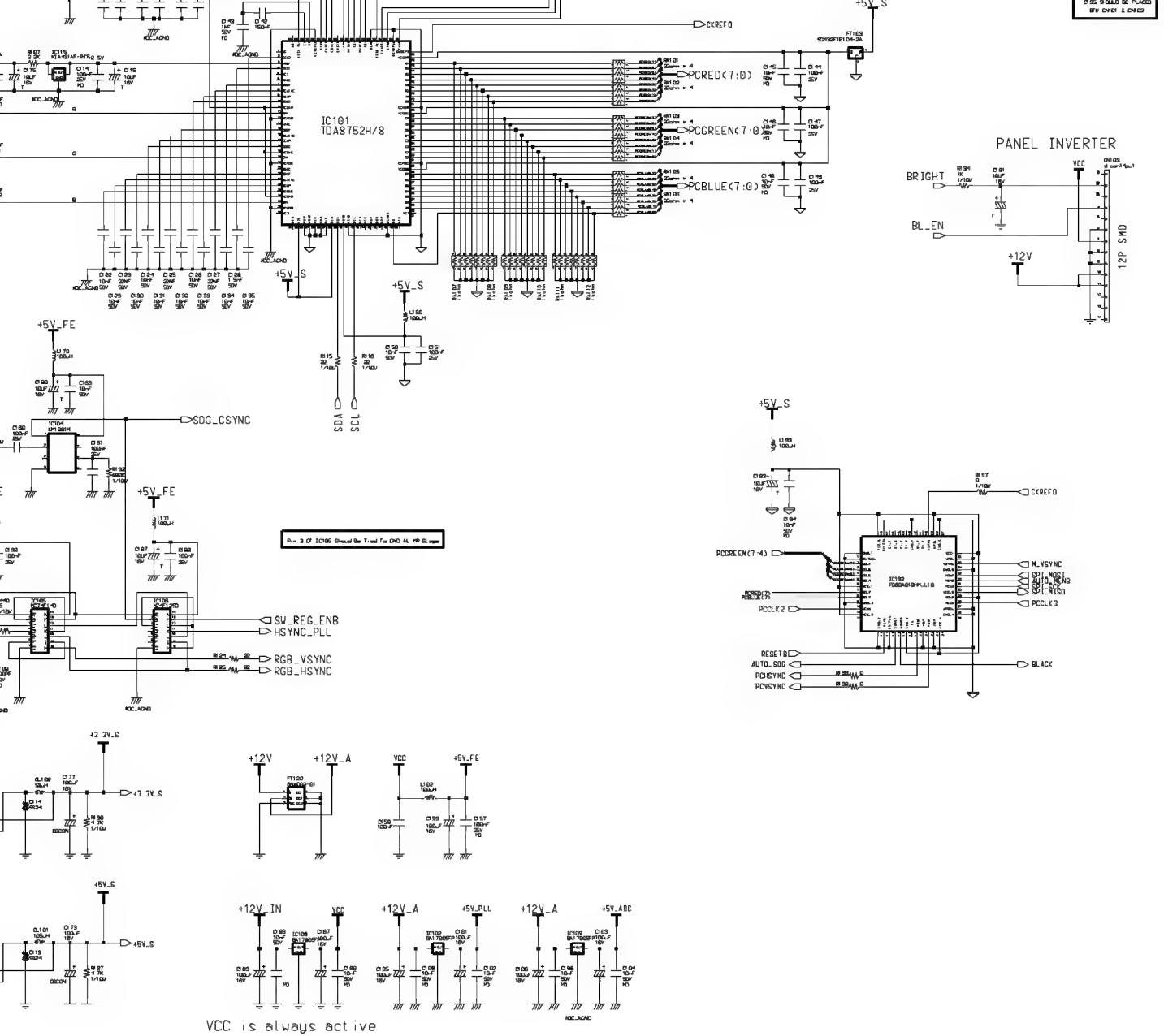
7 Block Diagram



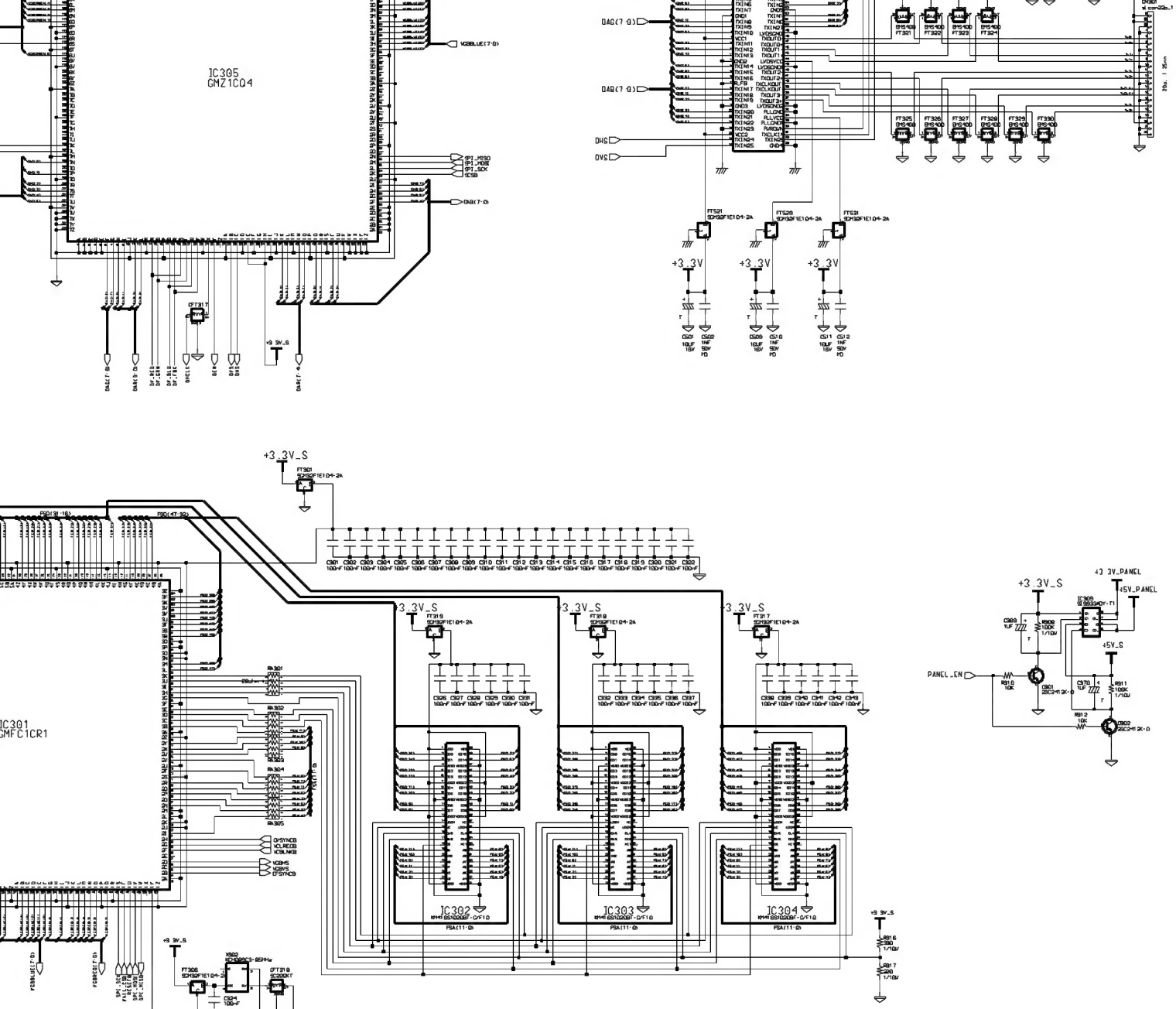
Memo

8 Wiring Diagram





VCC is always active


IC305
GMZ1C04
+3_3V
+3_3V
+3_3V

+3_3V_S
IC301
GMFC1CR1
IC302
IC303
IC304

+3_3V_S
+5V_PANEL
PANEL_EN
+5V_S

11	5	32	Clock
12	NC	33	Clock
13	5	34	5
14	5	35	NC
15	Pulse	36	3.8
16	Pulse	37	5
17	5	38	0
18	NC	39	5
19	NC	40	5
20	Pulse	41	GND
21	Pulse	42	NC

Unit: Vrms

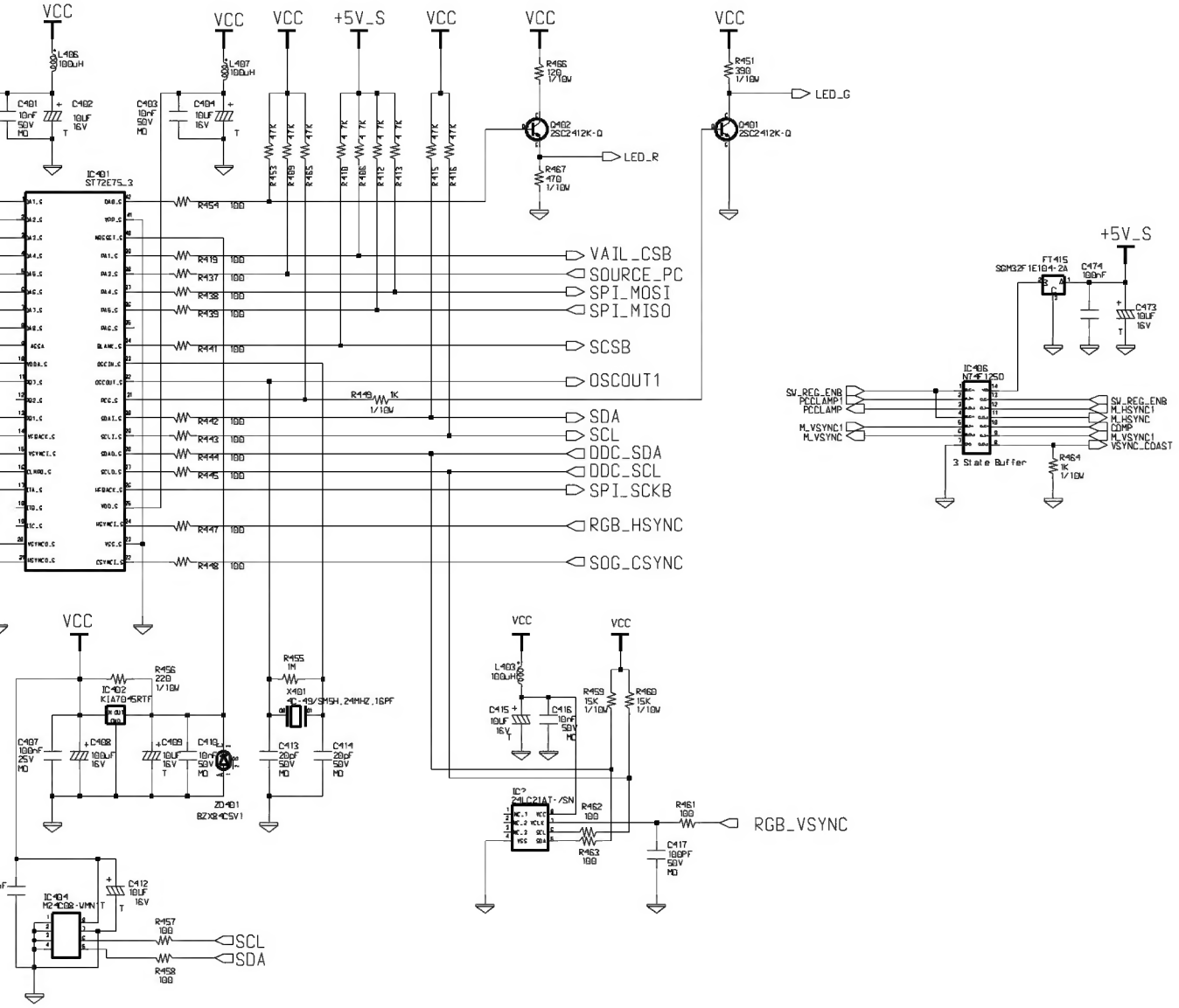


Table 9-8. IC403

pin #	MODES
	1024 x 768 / 75 Hz
1	NC
2	NC
3	NC
4	GND
5	4.43
6	4.46
7	4.87
8	5.03

Unit: Vrms

Table 9-9. IC404

pin #	MODES
	1024 x 768 / 75 Hz
1	GND
2	GND
3	GND
4	GND
5	5.03
6	5.03
7	GND
8	5.03

Unit: Vrms